

**Notice of Allowability**

Application No.

10/635,411

Examiner

Dao L. Phan

Applicant(s)

KISHIGAMI ET AL.

Art Unit

3662

-- **The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/6/03.
2. ☒ The allowed claim(s) is/are 1-50.
3. ☒ The drawings filed on 06 August 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☒ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

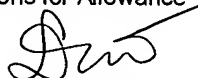
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- 1 ☒ Notice of References Cited (PTO-892)
- 2 ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3 ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No. \_\_\_\_\_
- 4 ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

- 5 ☐ Notice of Informal Patent Application (PTO-152)
- 6 ☐ Interview Summary (PTO-413), Paper No. \_\_\_\_\_
- 7 ☐ Examiner's Amendment/Comment
- 8 ☒ Examiner's Statement of Reasons for Allowance
- 9 ☐ Other

  
DAO PHAN  
PATENT EXAMINER

1. The following is an examiner's statement of reasons for allowance: the examiner found no teaching in the prior art that would render obvious the claimed radio-wave arrival-direction estimating apparatus including "an A/D converter for converting the demodulated signal to a complex digital signal, a correlation vector calculation unit for calculating a correlation matrix by correlation calculation of the complex digital signal between the antenna elements, a triangular matrix calculation for factorizing the correlation matrix to a product of one of an upper triangular matrix and a lower triangular matrix, an arrival-angle evaluation unit for calculating an evaluation value of an arrival-angle evaluation function every predetermined angle, the arrival-angle evaluation function being expressed using the one of the upper triangular matrix and the lower triangular matrix", claim 34, "a digital orthogonal wave detector for orthogonally demodulating the intermediate-frequency digital signal, a correlation vector calculation unit for calculating a correlation matrix by correlation calculation of the complex digital signal between the antenna elements, a triangular matrix calculation for factorizing the correlation matrix to a product of one of an upper triangular matrix and a lower triangular matrix, an arrival-angle evaluation unit for calculating an evaluation value of an arrival-angle evaluation function every predetermined angle, the arrival-angle evaluation function being expressed using the one of the upper triangular matrix and the lower triangular matrix", claim 44, "an A/D converter for converting the demodulated signal to a complex digital signal, a correlation vector calculation unit for calculating a correlation vector by correlation calculation between a reference antenna element and another antenna element, the reference antenna element corresponding to a selected complex

digital signal, an arrival-angle evaluation unit for calculating an evaluation value of an arrival-angle evaluation function every predetermined angle, the arrival-angle evaluation function being expressed using the correlation vector", claim 45, "a digital orthogonal wave detector for orthogonally demodulating the intermediate-frequency digital signal, a correlation vector calculation unit for calculating a correlation vector by correlation calculation between a reference antenna element and another antenna element, the reference antenna element corresponding to a selected complex digital signal, an arrival-angle evaluation unit for calculating an evaluation value of an arrival-angle evaluation function every predetermined angle, the arrival-angle evaluation function being expressed using the correlation vector", claim 50.

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao L. Phan whose telephone number is (703)306-4167. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarcza Thomas can be reached on (703)306-4171. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1113.



**DAO PHAN**  
**PATENT EXAMINER**